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## Chapter 20: Exports and FDI in China

Jing Zhang<sup>a</sup> and Xufei Zhang<sup>b</sup>

<sup>a</sup> School of Contemporary Chinese Studies, University of Nottingham, UK

<sup>b</sup> Business School, Middlesex University, UK

Since it adopted open-door policy and launched economic reforms in 1978, China's exports, inward foreign direct investment (FDI) and economy have grown rapidly. China has become the largest exporter since 2009 and its exports have grown much faster than imports, resulting in a huge trade surplus over the years. Meanwhile, China has also been one of the largest recipients of FDI in the world. Its experience with exports and FDI undoubtedly has important implications for other developing countries. Rapid growth in China's exports appears to have been due to its increasing involvement in processing trade, which is facilitated by FDI (see chapter by Sharma and Wang on this volume). Trade intermediaries and indirect export through Hong Kong also seem to play an important role in this process. Intermediary firms play an important role in international trade especially in Asian developing countries and recent research in international trade has begun to examine the role of intermediary firms in export expansion (Bernard et al, 2010 and Antras and Costinot, 2011).<sup>1</sup> The purpose of this chapter is to provide an updated picture of China's exports and FDI by surveying the most recent research on this topic. It also identifies the challenges China faces, and explores the policy implications.

## **Rising sophistication of China's exports**

It is increasingly evident that the Chinese exports, in terms of product categories, are similar to those of exports from many developed countries. Rodrik (2006) finds that China has a more sophisticated export basket than its income level would imply, while Schott (2008) shows that the Chinese exports overlap with the exports from OECD and the degree of overlap is much greater than expected. Their findings, which seem to be inconsistent with China's comparative advantages and factor endowments, have attracted researchers' attention to explore possible explanations. Xu (2010) points out that Rodrik (2006) and Schott (2008) ignore possible quality differences between Chinese varieties and those of other countries, as well as huge geographical differences in China in terms of production capabilities and income levels. Amiti and Freund (2010) and Athukorala (2009) also challenge the findings by Rodrik (2006) and Schott (2008) and argue that the increased skill content of China's exports is driven mainly by processing trade, facilitated by increased participation of foreign invested enterprises (FIEs). These FIEs import parts and components for assembly in China and finished products are then exported as if they are 'made in China'. This finding is similar to a recent study by Jarreau and Poncet (2012) who found that increased involvement of FIEs in processing trade is the main driver of China's export sophistication between 1997 and 2007.

Koopman et al. (2012) provide a timely analysis by estimating the extent of domestic value added (DVA) in China's exports. After proposing a framework to estimate DVA that allows for processing trade, they show some interesting patterns: the share of DVA increased from 51% to 60% for China's exports during 2002-2007;

sophisticated and high-skilled sectors tend to have notably lower share of DVA, whereas many low-skilled sectors exhibit a high share of DVA; China's exports to developing countries embody much higher DVA share than exports to OECD countries; firm ownerships also matter: foreign firms tend to have relatively low share of DVA in their exports, whereas domestic private firms have the highest DVA share, with state-owned firms in the middle. Wang and Wei (2010), using disaggregated trade data from Chinese cities, investigate the regional variations in export sophistication. They find that cross-city human capital and high-tech zones are associated with more sophisticated export structures. This led them to argue that neither processing trade nor FIEs is a major factor in explaining the rising sophistication, instead improvement in human capital and government policies of tax-favoured high-tech zones tend to have contributed significantly to export sophistication.

### **What affects the Chinese exports?**

This section reviews the literature that examines the role of financial development, institutional quality and exchange rates in influencing Chinese exports.

#### ***Finance, credit constraints and trade***

Recent research has established the link between access to finance and trade performance in China. Using firm-level data, Du and Girma (2007) investigate the link between access to finance and export performance of Chinese private firms. Their findings suggest that access to formal financial channels enhances the export intensity of private firms, especially amongst politically unaffiliated firms in labour-intensive

industries. This implies that exports in capital-intensive industries are highly dependent on access to external finance. Manova et al. (2011) provide evidence on the harmful consequences of financial market imperfections on Chinese firms' ability to trade. They find that credit constraints severely restrict firms' overall export sales, hamper their capacity to enter markets, and limit the range of products these firms can trade. They also find that FIEs have better export performance than private domestic firms, and the advantage is greater in sectors at higher levels of financial vulnerability. Manova et al. (2011) conclude as FIEs can access additional funding from their parent company they are less liquidity constrained compared to domestic firms. Feenstra et al (2011) find the evidence that exporting firms face more severe credit constraints than domestic non-exporters. They confirm the findings of Manova et al. (2011) that credit constraints are much weaker for FIEs in China.

These findings suggest that the elimination of financial discrimination against private sector firms and the introduction of financial and banking sector reforms are an effective way of boosting exports of indigenous enterprises.

### ***Institutions and trade***

Institutions that distort the efficient allocation of resources across firms can have a significant effect on economic outcomes such as trade. Recent research has demonstrated the importance of institutional quality at the country level for both trade volume and the ability to trade in differentiated goods that rely on contract enforcement. Feenstra et al. (2012) investigate regional variation in institutional quality in China and show that institutional quality is a significant factor in determining Chinese regional

export patterns. Institutions matter more for processing trade, and more for foreign firms, as they have a greater reliance on contracts. This suggests that policy to improve institutional quality would greatly help domestic firms to export, and those in sectors with differentiated goods would benefit more.

If trade barriers are managed by inefficient institutions, trade liberalization can lead to greater-than-expected productivity gains. Khandelwal et al. (2011) examine Chinese textile and clothing exports before and after the removal of export quotas in 2005 to investigate whether the removal created an additional gain on productivity. Their evidence confirms the effects of market distortions on productivity performance. Productivity growth from the removal of quotas is 33 percent higher when quotas are allocated efficiently. The overall gains from quota removal are amplified by eliminating an inefficient institution allocating quotas. This implies that trade liberalization would help remove malfunctioning institutions in developing countries which is crucial for productivity improvement and export expansion.

### ***Exchange rates***

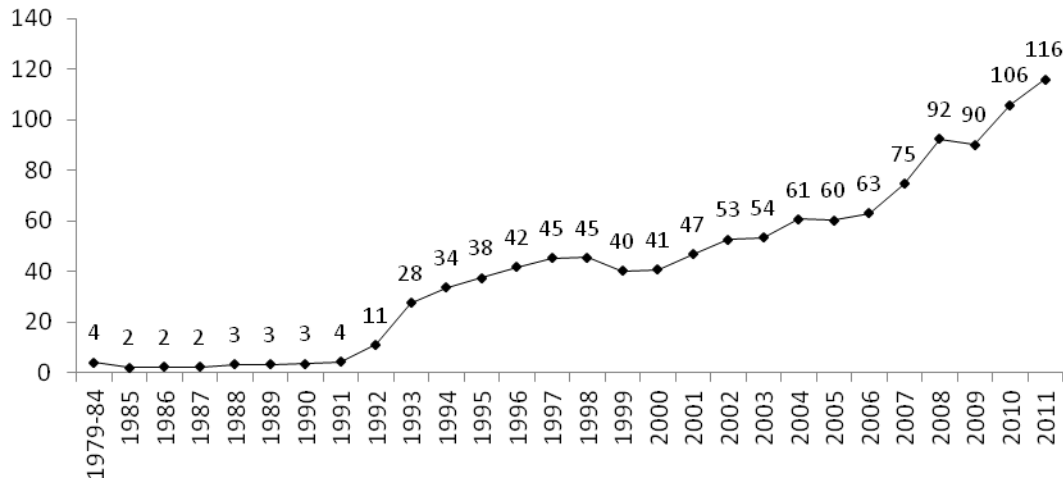
Chinese government has always been under pressure from western trade officials to allow the RMB to appreciate, as they regard China's currency policy as a main driver of its trade surplus. Despite the heated discussions, there is very limited study on this issue. A small literature uses aggregated trade data to examine the issue and provide some evidence for the negative effect of exchange rates on Chinese exports.

A couple of studies began to use disaggregated firm-level data and transaction-level trade data to investigate the link between exchange rate and the Chinese export performance. Using firm-level data from 2000 to 2006, Zhang and Liu (2012) examine the impact of exchange rate changes on Chinese firms' decisions on export market entry and export share. They find that changes in exchange rate levels play a significant role on both export market entry and export share. No evidence is found for the difference between foreign and domestic firms in responding to exchange rate changes. Industry heterogeneity is also found to be important. Tang and Zhang (2012) use monthly transaction-level trade over the same period and find a significant effect of exchange rate on China's exports. With the availability of detailed micro-data, further research could consider incorporating the roles of trade intermediaries, firm ownership and processing trade in explaining the exchange rate effect on exports. This would also shed some light on the exchange rate pass-through literature.

### **Trends and patterns of FDI**

China has attracted enormous amount of FDI since 1980's, reaching \$1,164 billion by 2011 (Ministry of Commerce, China). As shown in figure 1, there has been remarkable increase in FDI during 1979-2011. Thanks to the opening up the economy since the early 1992 and formulation of a series of laws and regulations to make the business environment more transparent and accommodating to FDI.

**Figure 1: Utilised FDI in non-financial sectors 1979-2011 (\$ billion)**



Sources:

Table 6-13 in China Statistical Yearbook (2011), <http://www.stats.gov.cn/tjsj/ndsj/2011/indexeh.htm>; and Statistics of January-December 2011 on National Absorption of FDI, Ministry of Commerce, China, <http://english.mofcom.gov.cn/aarticle/statistic/foreigninvestment/201202/20120207948411.html>.

FDI inflows into China are significantly imbalance in terms of its source, geographical and sectoral distributions. Hong Kong is the major source of FDI, continuously contributing more than 60% of the total FDI inflows to China.<sup>2</sup> Japan, the US, Europe and some Asian economies, such as Taiwan, Singapore, and South Korea, are the main sources of FDI. Over 80% of the annual FDI has gone into coastal regions due to favourable policies towards export-oriented foreign investment. For example, among the registered foreign invested enterprises (FIEs), about 38% of foreign investment was concentrated in lower Yangzi provinces (i.e. Jiangsu, Shanghai and Zhejiang), 25% in Southeast provinces (e.g. Guangdong, Fujian and Hainan), and 20% in North provinces (e.g. Beijing, Tianjin, Shandong, Liaoning and Hebei) in 2009, while



remaining 18-20% were scattered among the other 20 inland provinces with vast territory.

In terms of sectoral distribution, majority of FDI has gone into manufacturing sector, with 52% share in 2009 (China Statistical Yearbook, 2010). Investment in real estate also had a significant share (19% in 2009). In recent years, however, there has been a dramatic increase in FDI in some service sectors, including leasing and business services, wholesale and retail trades, transport, storage and post, information transmission, computer services and software.

### **Determinants of location choice of FDI in China**

The enormous inflow of FDI to China and its unbalanced regional distribution have led to a large number of research on the determinants of location choice of FDI. Cole et al. (2009) find that FDI is attracted to Chinese provinces that have good governance. Awokuse and Yin (2010) look at the impact of intellectual property rights (IPRs) protection on the recent surge of FDI inflows to China, using a panel data of 38 source economies. They find that protection of intellectual property rights significantly contributes to FDI inflows. When excluding Hong Kong and Taiwan from the sample, they find that market size turns out to be a significant and important factor

Using a panel data of 6,288 US firms in China, Du et al. (2008a) show that US firms prefer to locate in regions with better protection of IPRs, lower level of government intervention in business operation, lower degree of government corruption, and better contract enforcement. They also find that FDI are attracted to regions with

higher foreign and domestic horizontal agglomerations across regions and vertical agglomerations between upstream- and downstream-industries. Similar results are also found in Du et al. (2008b) which is based on a more comprehensive data that include foreign firms in China from US, EU, Japan and Korea. Furthermore, they find foreign horizontal agglomeration can mitigate the negative impact of weak institutions on FDI inflows, while the evidence of the interaction between institutions and domestic horizontal or vertical agglomerations is mixed. Du et al. (2008c) compare the sensitivities of FDI from Hong Kong, Taiwan, US, EU, Japan and Korea toward the variation in economic institutions. The findings suggest that foreign firms from the source economies which are institutionally more remote from China have a stronger aversion to regions with weaker economic institutions, and such impact is more significant for wholly foreign-owned enterprises (WFOEs) than joint ventures (JVs).

Some recent studies attempt to use new approaches to examine the determinants of FDI location decisions. Liu et al. (2010) examine the impact of wage on the location choice of 2,884 firms investing in China, using a two-step control function approach, in order to better control for unobserved location-specific attributes than the traditionally used nested logit models or spatial fixed effects models. The results indicate that investors in labour-intensive industries are the more sensitive to local wages than those in skill-intensive industries. Boermans et al. (2011) firstly adopt a factor analysis to summarise the impact of over 40 variables that may have impact on FDI inflows in Chinese provinces. They derive these variables into four determinant factors, including institutional quality, labour costs, market size and geography. The results confirm the theoretical predictions that FDI is attracted by good institutions, low labour costs and large market size. The overall results suggest a robust impact that low labour cost

combined with improvements in institutions are the key determinants for Chinese provinces to attract FDI.

### **Spillover effects of FDI in China**

FDI can have spillover effects in a number of areas. In this section we review the literature that investigates the effects of foreign investment on technology and the environment.

#### ***Technology Spillovers***

The favourable foreign investment policy is mainly based on the idea that such investment can benefit host countries through technology transfer, leading to improved productivity performance of domestic firms (Liu, 2008; Xu and Sheng, 2012). Fu and Zhang (2011) summarise that in the medium- to long-run, domestic firms will benefit from FDI via (a) technology transfer and training of labour; (b) horizontal spillovers in the same industry/region through demonstration and labour turnover; (c) vertical spillovers within the value chain through forward and backward linkages; and (d) the competition effect that forces inefficient firms to exit from the market and the surviving ones to innovate.

Hu and Jefferson (2002) examine the spillover effects of FDI to medium and large firms in China's electronic and textile industries. Their findings suggest that FDI reduces the productivity of domestic firms in the short run; while in the long run, domestic firms which can survive will capture some technology transferred from

foreign firms. Using World Bank firm survey data in 2000, Hale and Long (2011) failed to find evidence of productivity spillovers from FDI in five Chinese cities. They believe that institutional factors, such as the lack of labour mobility and competitive pressure in some industries, may lower the potential productivity spillovers from the presence of FDI

Fleisher et al. (2010) use province level data and find that FDI had greater effect on TFP growth before 1994 than after due to the encouragement and increasing success of private enterprises. Girma et al. (2009) use firm-level panel data of state owned enterprises (SOEs) to examine FDI spillovers on innovation activity. While foreign capital participation leads to higher level of innovation activity at firm level, FDI in the sector has a negative effect on innovation activity in SOEs in general. Positive spillovers are found for SOEs that export, invest in human capital, or have prior R&D experience.

### ***Effects on the Environment***

If foreign firms do transfer advanced technology and management knowhow to domestic firms, foreign firms will help to reduce the industrial pollution in developing countries because they are generally believed to be cleaner than their domestic counterparts. However, such idea is at odds with the so called pollution haven hypothesis (PHH) that FDI may be attracted to developing countries by their less stringent environmental regulations. Traditional trade theory shows that trade is governed by comparative advantages, and MNEs, as agents of trade, seek cost reductions and respond to market imperfections. Therefore, increasing domestic costs

due to stringent environmental regulations in the developed countries will lead the polluting-intensive MNEs to relocate their production to other areas. This will trigger “race-to-the-bottom” competition for lax environmental regulations in developing countries in order to gain comparative advantages in dirty goods production and to attract more FDI. As a result, differences in environmental regulations are turning developing countries to be “pollution havens” (Zhang and Fu, 2008, Dean et al. 2009).

There have been a number of empirical studies testing the existence of intra-country or inter-country PHH and the results are mixed. Zhang and Fu (2008) find that stringent environmental regulations have a negative effect on FDI. After controlling the pollution-intensity of industries, Di (2007) finds that FDI in polluting industries tend to locate to regions with laxer environmental regulations. These dirty firms are more likely to locate in less developed regions and more sensitive to regulations, and prefer regions where they have more bargaining power with local government. Dean et al. (2009) further control the origins of equity joint ventures (EJVs) in China, and find that HMT (Hong Kong, Macao and Taiwan) funded EJVs in highly-polluting industries are attracted by weak environmental standards but non-HMT funded EJVs are not, regardless of the pollution intensity of the industry.

He (2006) constructs a dynamic and simultaneous model to study the relationship between FDI and emission of sulphur dioxide ( $\text{SO}_2$ ) through the three mechanisms: increase in economic activity (scale effect), changes industrial structure (composition effect), and using new technologies and raising income that leads to demand for stricter environmental regulations (technique effect). Evidence shows that the total impact of FDI on  $\text{SO}_2$  emissions is very small. The negative scale and

composition effects of FDI cancel out its positive technique effect. The simultaneous model also suggests environmental regulation stringency has negative effect on FDI inflow, which is supportive evidence of PHH. In contrast, Bao et al. (2010) find FDI in general helps reduce emissions of five pollutants in Chinese provinces, largely due to its technique effect, although such impact varies significantly across regions and for different pollutants.

Wang and Jin (2007) test environmental performance of different types of ownership, and find that foreign invested firms and collective-owned firms have better environmental performances than SOEs and privately owned enterprises, indicating that foreign firms may use more environmental friendly technologies in their production. In a recent study of FDI and environmental pollution Lan et al. (2012) find that the impact of FDI on pollution emission greatly depends on the level of human capital. FDI reduces pollution emissions in provinces with higher levels of human capital but increases emissions in provinces with lower levels of human capital.

Generally, the results on pollution-haven hypothesis are mixed for China. Current studies mainly used aggregated data at province or city levels and cannot well distinguish the origin, orientation, pollution intensity and the emissions/abatement costs of FDI. If more disaggregated data is available, future research may study the pollution haven effect of different types of FDI and shed new light on this debate.

## **Challenges, policy implications and future directions**

A major challenge that China faces today is how domestic firms build up their international competitiveness as it is a key to long-run economic growth. As Blonigen and Ma (2010) have argued that the gap between domestic firms and foreign firms appears to be increasing. The previous policy to encourage foreign investment in hoping for technological spillovers from such investment to domestic firms doesn't seem to well serve this purpose. In recent years, Chinese government has begun to change the policy treatments for FIEs, which provides a level-playing field for domestic firms. Although increased international fragmentation is a main trend, processing trade with assembling imported inputs adds less value than ordinary trade. Chinese firms doing processing exports could only earn a small fraction of profits in global value chain. China may lose its comparative advantage in labour-intensive industries due to the rising labour costs, high inflation and costs of other factor inputs in recent years. This has, in fact, led some foreign buyers to switch to other Asian countries with lower labour costs. Financial system and institutional reforms are also a big challenge for Chinese authorities. However, The process to the liberalization of financial markets and the development of a mature financial system would not be smooth and easy. So would be the institutional reform. To address these challenges, the Chinese government should aim to provide market-based business environment for firms to ensure resource allocation in line with its intrinsic comparative advantage. While both within and cross region agglomerations have significantly increase FDI inflows to China, its domestic market is still fragmented, limiting access to the suppliers and customers across regions. Further reform to remove domestic trade barriers is necessary.

There is also an urgent need to increase effort to improve institutional quality to attract FDI. These include undertaking registration (Hukou) reform to increase labour mobility, and improving the legal system and its implementation for better business environment are some examples of this. In recent years, China has carried out a number of measures. For example, the promulgation of Real Right Law provides more protection to the realties and chattels. Some p rovinces, such as Guangdong and Chongqing, are trying to relax the registration restrictions in order to attract both high-tech talents and low-wage migrant workers.

Studies reviewed here have shown that the encouragement of export-oriented FDI, particularly those from overseas Chinese investors, has not been necessarily beneficial to the productivity improvement of domestic firms. Also, there is evidence to suggest that the massive inflows of FDI in the absence of proper implementations of environmental regulations have done damage to Chinese environment even though they are in high-tech industrial sector. For example, the production of solar panels, which are regarded as high-tech and green goods, is highly polluting and energy consuming. China should avoid being the new “world manufacturing workshop of environmentally damaging industries for green products” (Fu and Zhang, 2011). Rising labour costs in the coastal regions after the 2008 financial crisis, have led many foreign firms to relocate to less-developed inland regions with lower labour costs. Some inland regions tend to compete for dirty FDI. Although Chinese central government has set strict environmental standards, the implementation of these regulations varied across regions. If local governments lower their environmental standards to attract pollution-intensive FDI, local economy will grow at the costs of permanent damage to environment.



## **Conclusions**

We expect that in the next few years, processing trade and FIEs would continue to play an important role on China's growth trajectory. We also expect rising labour costs would not only bring competitions from countries with low costs, but also drive exporting firms to relocate from the expensive coastal regions to cheaper inland regions within China. For example, Foxconn, a Taiwanese company involved in assembly of consumer electronics products for famous multinational companies such as Apple, has expanded its factory sites to inland cities Chengdu and Wuhan. The relocation of firms from coast to inland regions may have significant impact on China's long-run growth and help reduce the disparity between the two regions. The Chinese government has realised the need to build up international competitiveness of its domestic firms to ensure sustainable development. The achievement of this goal, however, needs financial system and institutional reforms, which are not easy to embarked on. Reform agenda should also include human capital development, increasing labour mobility and tightening environment regulations.

While this chapter is unlikely to be a comprehensive survey on China's exports and FDI, it highlights the key issues in the area, and hopefully would contribute to well-informed discussion. It also provides experience and lessons for other developing and emerging economies.

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## Notes

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<sup>1</sup> An excellent review of research on trade intermediaries can be found in Bernard et al. (2011), Ahn et al. (2011), Feenstra and Hanson (2004), and Fisman et al. (2008).

<sup>2</sup> Including their investment via offshore financial centres or free ports, such as British Virgin Islands, Cayman Islands, Samoa, Mauritius, Barbados, etc.